

BRYOZOA FROM THE PORT KEATS BORE, NORTHERN TERRITORY.

By JOAN CROCKFORD, M.Sc., Linnean Macleay Fellow of the Society in Palaeontology.

(Plate iii; five Text-figures.)

[Read 28th July, 1943.]

Introduction.

Three new species of Bryozoa amongst a collection of fossils from bores put down at Port Keats, Northern Territory, were described and figured by R. Etheridge Jnr. in 1907. Revised descriptions of these species from the type material, now in the South Australian Museum collections, are given here. Two other species of Bryozoa, *Fenestrellina horologia* (Brettnall) and an undescribed Fenestrellinid,* occur in these three small pieces of bore core; the first of these is probably the form listed by Etheridge as *Fenestrella bicellulata* Etheridge, and compared by him to *F. mimica* Ulrich. In addition to the species recorded a large number of fragments of Bryozoa which occur in the material belong to undescribed species; these specimens are not well enough preserved for any detailed description, but their presence is emphasized to show that the few species which can at present be named do not give a representative idea of the varied fauna present.

The two Fenestrellinids recorded here are comparatively long-ranged forms (they occur, in the North-West Basin sequence in Western Australia, from the Callytharra to the Wandagee Series), and the other three described species of Bryozoa are not known to occur in any other area; the general aspect of the Bryozoan fauna is unlike that of the higher beds in which Bryozoa are important in the Permian sequence of Western Australia—the Wandagee Series and the Nooncanbah Series of the Kimberley district—and appears to be more like the fauna of the earlier stages of the Western Australian Permian.

My thanks are due to the Director of the South Australian Museum for the loan of the specimens revised.

Description of Species.

Order CYCLOSTOMATA Busk.

Family FISTULIPORIDAE Ulrich.

Genus FISTULIPORA McCoy, 1849.

Fistulipora McCoy; Bassler, 1929, 41.

Synonym: *Dybowskiella* Waagen and Wentzel, 1886.

Etheridge referred this species to *Dybowskiella* Waagen and Wentzel; as Bassler (1929, p. 41) and earlier writers have pointed out, this name is a synonym of *Fistulipora* McCoy, 1849, since the species referred to *Dybowskiella* differed from the type of *Fistulipora* only in the degree of development of their lunaria.

FISTULIPORA GEEI (Etheridge), 1907. Pl. iii, figs. 1, 4; Text-figs. 2-5.

Dybowskiella Geei Etheridge, 1907, 13, Pl. viii, fig. 2, not figs. 1, 3-8.

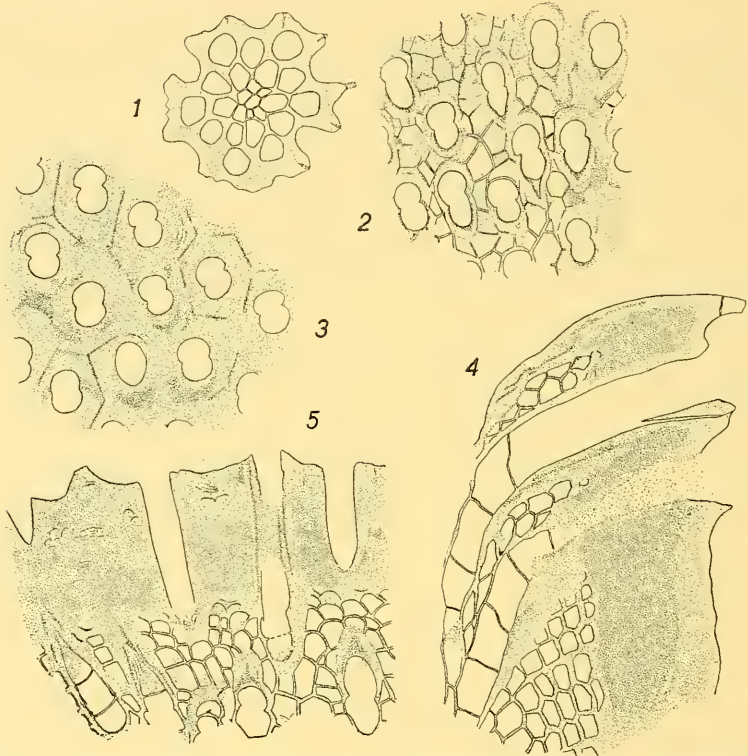
Lectotype: P.2120 A, South Australian Museum Collection. (Figured by Etheridge, Pl. viii, fig. 2); from between 555' and 580' in No. 3 Bore, Port Keats.

Ramose *Fistulipora*; *zoecia with strongly developed lunaria; one to three rows of coarse vesicles separating the zoecia in the early part of the mature zone, replaced by thick tissue near the surface.*

The zoarium is ramose, with solid cylindrical branches, about 5 to 6 mm. in diameter; small solid, spot-like maculae surrounded by zoecia with more strongly developed lunaria occur rarely on the surface. The zoecial apertures are small, with well-developed lunaria occupying one-half of the circumference at the posterior end of the

* This species, which belongs to a new genus, has been described in a paper read at the April, 1942, meeting of the Royal Society of Western Australia; it is an abundant form in the Western Australian Permian.

aperture, and they are rather closely spaced, about 2.5 to 3.5 occurring in 2 mm. longitudinally; they are not regularly arranged, though they may fall into fairly regular steeply pitched diagonal rows. The interapertural spaces are solid at the surface, and the lunaria are produced upwards to form high hoods over the apertures; simple grooves occur between the thick bases of these hoods, and divide the surface into polygonal areas. The length of the apertures is 0.25 to 0.29 mm., and their width is 0.19 to 0.22 mm. at their widest part, and about 0.15 mm. measured across at the level of the ends of the lunaria. When freshly exposed the apertures are frequently covered by a very thin, slightly convex, separate calcareous plate.



Text-fig. 1.—*Rhombopora hindei* Etheridge: Transverse section of the zoarium (from polished specimen, P.2121 B, South Australian Museum Collection). $\times 20$.

Text-figs. 2-5.—*Fistulipora geei* (Etheridge): 2, 3, tangential sections, 2 being in the inner and 3 in the outer part of the mature zone; 4, vertical section; 5, transverse section. $\times 20$. (*Camera lucida* diagrams.)

Longitudinal sections show that dense tissue is developed in the outer part of the mature zone for 0.65 to 0.9 mm. from the surface; within this the interspaces are occupied by vesicular tissue, with coarse, flatly-arched vesicles in the mature zone giving place to more elongate vesicles in the axial zone. In the mature zone about eight to ten vesicles occur around each zoecium, and there are one to two, less often three, rows of vesicles between adjacent zoecia. The zoecial tubes meet the surface obliquely, at about 75° ; the mature zone is about 1.5 mm. in width, and the zoecia bend from the axial to the mature zone at about 50° . Thin straight or oblique diaphragms occur in the axial zone, and are typically spaced in the later part of this zone about the width of the tubes apart; in the central part of the axial zone they are more widely spaced.

Etheridge figured two specimens from the same piece of bore core; the ramose zoarium described above was figured by him on Pl. viii, fig. 2. The specimen figured on Pl. viii, figs. 1, 3-8, is separated from this, and only the upper surface of the specimen, imbedded in the shale, and a small part of the immature zone, are preserved; the size

of the zoarium is about 3.5×1.7 cm., and it is up to about 2 mm. thick; it appears to be the upper part of a lamellar or encrusting zoarium, and not a ramose form, and although it is possible that this may be the basal expansion of the specimen here described as *F. geei*, the zooecia are markedly larger than those of the associated branches (0.38 to 0.41 mm. in length, 0.3 to 0.35 mm. in width, and 0.2 mm. wide at the ends of the lunarium), although they are very similar in shape, and they are more widely separated by three to four rows of vesicles replaced in the outer part of the mature zone by dense tissue; it is here considered to be a separate species, but additional material is needed to confirm this.

Order CRYPTOSTOMATA Vine.

Family RHABDOMESONTIDAE Vine.

Genus RHOMBOPORA Meek, 1872.

Rhombopora Meek, 1872; Moore, 1929, 132, 137.

RHOMBOPORA HINDEI Etheridge, 1907. Pl. iii, fig. 2; Text-fig. 1.

Rhombopora Hindei Etheridge, 1907, 14, Pl. xii, figs. 7, 8.

Lectotype: P.2121 A, South Australian Museum Collection. (Specimen figured by Etheridge); from between 555' and 574' in No. 3 Bore, Port Keats.

Fine Rhombopora, with eleven regular rows of apertures separated by longitudinal ridges bearing the acanthopores.

The zoarium is ramose, with solid cylindrical branches about 1.1 mm. in diameter; the apertures are oval, and the vestibules meet the surface very obliquely; the apertures are 0.33 to 0.4 mm. long and about 0.19 mm. wide, and the distance between the centres of successive apertures is 0.65 to 1.08 mm.; about 6 apertures occur in 5 mm.; they are arranged in 11 (less often 10) very regular longitudinal rows, and in well-marked diagonal rows. The rows of apertures are separated by more or less continuous ridges, which bear the acanthopores; these are placed in a single flexuous row on each ridge, and are spaced from 0.06 to 0.16 mm. apart; they are typically very small, but irregularly and rather infrequently an acanthopore of much larger size is developed. The interspaces between the apertures longitudinally are slightly concave from side to side, and are grooved and ridged, generally with one strong central groove and two slighter lateral grooves. The whole surface is finely granular. No branching is shown.

No thin sections could be made from the specimens, but polished surfaces at the ends of the specimens show cross-sections typical of *Rhombopora*; the width of the cortical zone is about one-quarter to one-third of the radius; the zooecial tubes are sub-angular and fairly thin walled in the axial zone.

There is no described species of *Rhombopora* which closely approaches this form in external appearance; a closer external resemblance is shown to species of *Acanthoclema* Hall (Devonian, Mississippian), but there is no indication that the zooecia here arise from an axial filament.

Genus STREBLOTRYPA Ulrich, 1889.

Streblotrypa Ulrich, in Miller; Ulrich, 1890, 403, 665; Bassler, 1929, 66.

STREBLOTRYPA BROWNI Etheridge, 1907. Pl. iii, figs. 3, 6.

Streblotrypa Browni Etheridge, 1907, 15, Pl. xii, figs. 9, 10.

Lectotype: P.2120 C, South Australian Museum Collection; from between 555' and 580' in No. 3 Bore, Port Keats.

Streblotrypa in which the mesopore-pits below the apertures are contained in hexagonal areas; apertures in about 24 rows; central bundle of smaller tubes well developed.

The zoarium is ramose, with solid cylindrical branches about 1.35 mm. in diameter. The zooecial apertures are oval, about 0.18×0.14 mm. in diameter, and are arranged in about 24 longitudinal, and in diagonal, rows. The apertures are surrounded by distinct peristomes, and well-marked hexagonal ridges enclosing the apertures define the front of the cell, which is occupied by from 9 to 12 mesopore-like pits, 0.03 to 0.06 mm. in diameter; these pits have no regular arrangement, but are usually in three, or four, distinct transverse rows, each containing two to four pits. No acanthopores occur. The distance between the centres of successive apertures is from 0.38 to 0.62 mm., but is

typically about 0.46 mm., and about 11 apertures occur in 5 mm. The internal structure is shown only on weathered surfaces; the cortical zone is about 0.24 mm. wide, and the zooecial tubes bend not very sharply to meet the surface at almost a right angle; a central bundle of smaller tubes is well shown.

This species shows a striking resemblance to *S. pulchra* Fritz, 1932, from the Permian of Vancouver I., but differs in its generally smaller size and more widely spaced apertures. The arrangement of the mesopore-pits in hexagonal areas gives a very different appearance from *S. marmionensis* Etheridge, which is abundant in the Permian of Western Australia and is of similar size, and from *S. germana* Bassler, from the Basleo and Amarassi Beds of Timor.

SUMMARY.

Three species of Bryozoa described by R. Etheridge Jnr. in 1907 from the "Permian-Carboniferous" of the Northern Territory are revised from the type material, and two additional species present in the material are recorded.

Bibliography.

- BASSLER, R. S., 1929.—Paläontologie von Timor, xvi Lief., xxviii.
 BRETNALL, R. W., 1926.—W. Aust. Geol. Surv., Bull. 88.
 ETHERIDGE, R., Jnr., 1907.—Supplement to Parliamentary Paper [South Australia] No. 55 of 1906.
 FRITZ, M. A., 1932.—*Trans. Roy. Soc. Can.*, 3rd Ser., 26 (4): 93.
 MOORE, R. C., 1929.—*J. Paleontology*, 3 (2): 121.
 ULRICH, E. O., 1890.—*Geol. Surv. Ill.*, 8.
 WAAGEN, W., and WENTZEL, J., 1885.—*Palaeontologica Indica*, Ser. 13, 1.

EXPLANATION OF PLATE III.

Fig. 1.—*Fistulipora geei* (Etheridge): Surface of the lectotype, $\times 10$. The lunaria at the posterior side of each aperture have mostly been broken across near their base, but the majority of the apertures are still covered by a thin calcareous plate; a macula is shown near the top left-hand corner of the figure.

Fig. 2.—*Rhombopora hindei* Etheridge: Lectotype, $\times 10$.

Figs. 3 and 6.—*Streblotrypa browni* Etheridge: Lectotype, $\times 10$ and $\times 20$.

Fig. 4.—*Fistulipora geei* (Etheridge): Lectotype, with the second specimen figured by Etheridge on the right hand side, natural size.

Fig. 5.—*Fistulipora* sp.—Inner surface of the mature zone of the second specimen figured by Etheridge (P.2120 B), $\times 10$.

(Photographs, H. G. Gooch.)

AN ORDOVICIAN BRYOZOAN FROM CENTRAL AUSTRALIA.

By JOAN CROCKFORD, M.Sc., Linnean Macleay Fellow of the Society in Palaeontology.

(One Text-figure.)

[Read 28th July, 1943.]

Introduction.

The occurrence of a few small fragments of Trepostomatous Bryozoa in specimens from the Ordovician of Central Australia amongst a collection from the Horn Expedition now in the Museum of the Department of Geology, University of Sydney, is of interest in the absence of any previous record of Bryozoa from Australia in the Ordovician, a system in which they attain very great development in North America and Europe. Occurrence of the shelly facies in the Ordovician of continental Australia is limited to the vicinity of the Toko Range in western Queensland and the Larapintine Series of the Macdonnell Ranges area of Central Australia; these specimens are from the fossiliferous horizon of the Larapintine Series, correlated by Teichert (1939) with the Lower

Darriwilian of Victoria; their locality is catalogued as "Central Australia", but the specimen described is associated with *Orthis levicensis* Etheridge, and would presumably have come from one of the localities from which Tate (1896) recorded this form; Tate records two species of corals from the limestone of Middle Valley and George Gill Range, suggesting that they might belong to *Chaetetes*, and it seems very probable that these were Bryozoa. The specimens are small and imperfectly preserved, but a description of one of them is given as a record of their occurrence.

Order TREPOSTOMATA Ulrich.
Family TREMATOPORIDAE Ulrich.
Genus BATOSTOMA Ulrich, 1882.

Batostoma Ulrich; Ulrich, 1893, 288.

Batostoma, n. sp. Fig. 1, A-C.

Specimen a small weathered fragment, 1 cm. long, of a ramose zoarium, with branches about 1.5 mm. in width, increasing considerably in width before bifurcation, which occurs here at an interval of about 7 mm.; the branches seem to have been rather flattened. Zoecial apertures polygonal, 0.20 to 0.25 mm. in their greatest diameter,

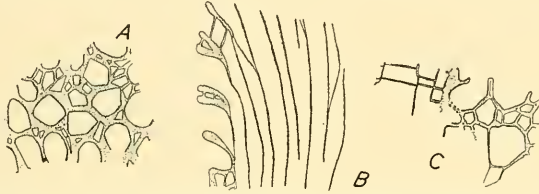


Fig. 1.—*Batostoma*, n. sp. A, Surface of part of the zoarium; B, Vertical section; C, Oblique tangential section. (Specimen 494, Sydney University Coll.). $\times 20$. (*Camera lucida* diagrams.)

and partly separated by small, angular mesopores, which are from 0.06 to 0.15 mm. in diameter; the mesopores are not rare, but they do not completely separate the apertures. Acanthopores occur occasionally at the angles of the apertures. Internally the zoecia are very long, almost vertical, and very thin walled in the axial zone; the tubes bend at about 60° to the narrow mature zone, where the walls are about 0.03 mm. in thickness; the width of the mature zone is about 0.21 mm. The tubes meet the surface at about 75° . The zoecial tubes are without diaphragms in the axial zone, but there may be one, or two, thin complete horizontal diaphragms, about 0.08 mm. apart, developed in the mature zone. Two or three closely spaced, rather thick tabulae occur in the mesopores. The wall structure is not well shown. No monticules nor maculae could be distinguished.

SUMMARY.

A record is made of the occurrence of Trepostomatous Bryozoa in the Ordovician Larapintine Series of Central Australia, and a brief description is given of one specimen, referred to *Batostoma* Ulrich.

Bibliography.

- MADIGAN, C. T., 1932a.—The Geology of the Western Macdonnell Ranges, Central Australia. *Quart. J. Geol. Soc. Lond.*, 88: 672.
 ———, 1932b.—The Geology of the Eastern Macdonnell Ranges, Central Australia. *Trans. Roy. Soc. S. Aust.*, 56: 71.
 TATE, R., 1896.—Report of the Horn Expedition to Central Australia. iii. Geology and Botany; Palaeontology.
 TEICHERT, C., 1939.—The Nautiloid *Bathmoceras* Barrande. *Trans. Roy. Soc. S. Aust.*, 63: 384.
 ULRICH, E. O., 1893.—Geological and Natural History Survey of Minnesota. Geology of Minnesota. Final Report. iii (i); Palaeontology.